January 7, 2016

United States District Court for the Western District of Wisconsin

One Wisconsin Institute, Inc. et al. v. Nichol, et al.

Case No: C:15-CV-324

Expert Report

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Expert Report of Nolan McCarty

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Nolan McCarty is the Susan Dod Brown Professor of Politics and Public Affairs and the chair of the Politics Department at Princeton University. He earned his PhD in political economy at Carnegie Mellon University. He has published widely on topics related to legislative and electoral politics, especially the effects of electoral rules on legislative partisanship and polarization. His work utilizes sophisticated quantitative methods and mathematical models. He is the co-author of a PhD-level textbook on the application of mathematical models in political science. He was the founding co-editor-in-chief of the *Quarterly Journal of Political Science*, a journal that specializes in quantitative and analytical political science.

He has served as an expert in several election law cases including *Romo v. Detzner*[1] and *League of Women Voters of Florida, et al. v. Detzner, et al.*[2] where he rebutted expert testimony challenging the legality of Florida congressional and state senate districting maps, respectively. He was provided expert reports in *NAACP et al v. Husted*[3] and *Ohio Democratic Party et al. v. Husted et al.*[4] concerning the impact of changes in early in-person voting procedures in Ohio.

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[1] Case number 2012-CA-000412 (Florida Circuit Court, Leon County).
[2] Case number 2012-CA-002842 (Florida Circuit Court, Leon County).
[3] Case number 2:14-CV-404 (US District Court for the Southern District Ohio Eastern Division).
[4] Case number 2:15-CV-1802 (US District Court for the Southern District Ohio Eastern Division).

Section 1: Introduction

I was retained by the Attorney General of the State of Wisconsin to address several issues related to the plaintiff's arguments in *One Wisconsin Institute Inc et al v. Nichol et al*. In particular, I was asked to assess whether or not changes in electoral administration, including 2011 Act 23 and 2013 Act 146, adversely impacted the opportunities for the citizens of Wisconsin to participate in the electoral process. Specifically, I will evaluate the quality of the evidence and analysis performed by plaintiffs' experts who argue that the cumulative effect of the acts' voter identification provisions, changes to absentee voting periods, and residency requirements disproportionately affected racial and ethnic minorities and students. I will also consider whether or not there was an apparent partisan advantage obtained by these changes. Following plaintiffs' expert Kenneth Mayer, my analysis will be based on comparisons of turnout in the 2010 election, a midterm election with a gubernatorial race before the policy changes, with the 2014 election, a midterm election with a gubernatorial race following the policy changes.

　　　　My analysis produces the following findings.

1.   Despite the changes in electoral procedure, turnout in Wisconsin surged between 2010 and 2014. Only Louisiana and Washington DC saw greater increases in voting participation than Wisconsin. The increase was also large by historical Wisconsin standards.

2. The increase in turnout was not limited to white voters. Black and Hispanic voting participation also rose considerably. When turnout is measured as a percentage of the citizen voting age population the increase in turnout for Blacks is almost as large as that for whites. These findings contradict those of Professor

Mayer who reports declining turnout for all groups and those of Professor Barry Burden who reports declining turnout of Blacks and Hispanics based on his analysis of the Current Population Survey.

3. Professor Mayer's analysis of whether changes in electoral administration increased the burdens of minorities, students, and those without driver's licenses suffers from several methodological issues and data limitations. In my opinion these issues are severe enough to question his interpretation of his findings.

4. Based on a comparative analysis of the gubernatorial election returns of 2010 and 2014 at the municipal level, it is difficult to identify any differences that might be attributable to a differential partisan effect of Wisconsin's voting law changes. In terms of partisan vote shares and turnout, the elections were almost identical. The only difference being that the Republican candidate did slightly better in the most Republican municipalities and slight worse in the least Republican municipalities. These facts are hard to reconcile with the turnout changes postulated by the plaintiffs.

5. Despite changes to procedures for absentee voting, the rates by which Black and Hispanic voters cast absentee ballots increased substantially. The increases for Blacks were proportionately greater than the increase for whites.

I am being compensated at a rate of $400 per hour for this report.

Section 2: Analysis of Turnout in 2010 and 2014

Following the expert report of Kenneth Mayer, my report will focus primarily on comparisons of turnout in 2010 and 2014. There are many good reasons to focus on such a comparison. First, all of the changes to Wisconsin electoral procedures were promulgated and implemented during the period between the two elections. Thus, 2010 represents a pre-reform outcome and 2014 represents an outcome for a post-reform election. Second, both elections are similar in that they were midterm election years. Moreover, both had contested gubernatorial elections. There was a U.S. Senate election in 2010 but not in 2014, however. This fact should work against higher turnout in 2014. Finally, importantly, the competition and outcomes at the top of the ticket were almost identical in 2010 and 2014. In 2010, Scott Walker won the governorship with 1,128,941 votes (52.3%) to Thomas Barrett's 1,004,303 votes (46.5%). In a near replay in 2014, Scott Walker won 1,259,706 votes (52.3%) to Mary Burke's 1,122,913 (46.6%).

Given these similarities, the comparison of turnout patterns in 2010 and 2014 provides an opportunity to evaluate the extent to which the new laws and procedures affected turnout overall and across groups.

But despite the changes in the electoral laws (and lack of a Senate election), turnout in Wisconsin increased dramatically between 2010 and 2014. Almost a quarter million more votes were cast for governor in 2014 than were cast in 2010. This represents an 11.7% increase in the raw vote totals. Using data compiled by Michael McDonald of the University of Florida, this increase in turnout can be put into comparative and historical perspective.[5] McDonald reports that Wisconsin turnout as a percentage of the voting age

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[5] http://www.electproject.org/home/voter-turnout/voter-turnout-data.

population (VAP turnout) climbed 4.5 percentage points between 2010 and 2014. The

share of the voting eligible population (VEP turnout) grew 4.2 percentage points.[6]

Regardless of whether one looks at VAP or VEP turnout, Wisconsin's was the third

highest increase over the same period, trailing only Louisiana and Washington DC in

increased VAP and VEP turnout. To put these changes into a broader context, it is worth

noting that the VAP turnout in the U.S. overall dropped by 4.6 percentage points. Thus,

Wisconsin outperformed the national average by almost 9 percentage points. The

increases are documented in other sources used by the plaintiffs. For example, the

Wisconsin Government Accountability Board reports that turnout as a proportion of

registered voters climbed 8.9 percentage points between 2010 and 2014.[7]

The increase in turnout between 2010 and 2014, of course, does not prove that

Wisconsin's electoral reforms boosted turnout nor does it prove they had no effect.[8]

However, that turnout increased at such a high rate raises the burden of the plaintiffs to

show evidence that turnout would have been higher without the reforms. But several

other pieces of evidence cast further doubt on that counterfactual. First, Wisconsin's

gains came off a very high level turnout in 2010 which witnessed the sixth largest VAP

and fourth largest VEP turnout in the U.S. Large gains from states with already high

turnout rates are rare. Of the top ten turnout states in 2010, only two (other than

Wisconsin) had turnout increase by more than two percentage points. Six saw turnout

decrease.

Another possible argument for the counterfactual would be that Wisconsin's turnout

has been trending upward and that the trend would have predicted even higher turnout in

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[6] VEP turnout excludes non-citizens and ineligible felons from the denominator.
[7] See Mayer Report, Table 6.
[8] It is important to note that the same could be said if it were the case that turnout had fallen.

2014 than the one obtained. There is no evidence for such a trend, however. Consider

the change in turnout across the immediately preceding pair of midterm elections (2006

to 2010). The VAP turnout rate fell 1.2 points while the average for the U.S. went up .5

percentage points. Moreover, Wisconsin placed 36 of 50 states in terms of the change in

VAP turnout.

In summary there is little-to-no evidence that the changes in Wisconsin electoral law

depressed overall turnout between 2010 and 2014.

Section 3: Analysis of the State Voter Registration System Data

Despite that fact that voting in Wisconsin surged between 2010 and 2014, Professor

Kenneth Mayer's report relies primarily on a dataset that erroneously suggests a

substantial decline in turnout. His dataset is based on the voters who appear in the

Wisconsin State Voter Registration (SVRS) file as of September 24, 2015. Professor

Mayer merged this file is with the Wisconsin Department of Transportation driver's

license records and data from a Catalyst LLC to provide information about the racial

identification of each voter.[9]

The central problem with Professor Mayer's use of the SVRS file is that it is a

moment-in-time snapshot of Wisconsin's registered voters. Importantly, the file does not

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[9] Catalist is a for-profit firm, but has long operated in the support of Democratic Party and progressive causes. According to journalist Sasha Issenberg who has covered the political consulting industry extensively, "Catalist, the theoretically for-profit company imagined itself as a public utility, with less interest in returning a profit to its investors than becoming an indispensable tactical resource for the American left."
http://www.slate.com/articles/news_and_politics/victory_lab/2012/01/the_co_op_and_the_data_trust_the_d nc_and_rnc_get_into_the_data_mining_business_.html. According to the affidavit of Yair Gitzah, their model for predicting voters' race is proprietary and was not made available. So I was unable to evaluate the underlying model.

contain information for voters who were registered for previous elections but have left the voter file for some reason. If, as one would expect likely, non-voters exit the voter files at higher rates than voters, then estimates of turnout in previous elections will be dramatically overstated.

That non-voters roll-off at higher rates is documented in Tables 4 and 5 of Professor Mayer's report. Table 4 reveals that the SVRS file undercounts registrants relative to the calculations of the Wisconsin Government Accountability Board (GAB) by 736,610 or 21.3% of the total.   But Table 5 reports that the SVRS only underreports 2010 voters by 180,194 or 8.2% of the total. So the pattern is exactly that which would produce upward biases in the 2010 turnout rates.

Although Professor Mayer ignores the roll-off problem, he does adjust for the opposite problem i.e. that some votes in the 2015 SVRS were ineligible to vote in prior elections by eliminating those that were too young to vote in each earlier election and eliminates those who had not voted in a previous election and changed their registration after the election in question. His second step almost certainly eliminates some eligible voters such as those who registered prior to a previous election but did not vote in it. For example a voter who registered in 2008 but did not vote until 2012 would have been eliminated from calculations involving the 2010 election. Thus, this procedure also biases the turnout estimates of earlier elections upwards.

As there is more roll-off or "attrition" between earlier elections and 2015, the extent of the overestimate in turnout increases as one goes back in time. In other words, the SVRS turnout estimate from 2014 will be slightly biased by small amount of attrition between November 2014 and September 2015. But the turnout estimate from 2010 will

be significantly biased by the much larger number of voter file exits between November 2010 and September 2015. Importantly, because the bias is bigger for earlier elections, use of the SVRS file may erroneously show declining turnout when turnout is actually increasing.

The numbers in Professor Mayer's Table 6 shows that this is obviously the case. For the 2014 election, the estimate of the rate of turnout for registered voters is 71.3, just a bit larger than that estimated by the Government Accountability Board based on the GAB-190 reports from each municipality. However, Professor Mayer's estimates for the 2012 special election exceed those of the GAB by 5.7 percentage points. His estimates for the 2010 election are 73.9% compared to the GAB's 62.3% -- a 11.6 percentage point gap. The result of these biases is that Mayer reports a 2.5 percentage point drop in turnout among registered voters between 2010 and 2014 whereas the GAB reports a 9.9 percentage point increase.

While Mayer does report the GAB numbers, his discussion essentially ignores the obvious biases in his SVRS estimates. Importantly, if the differential in roll-off rates between voters and non-voters is correlated with race, his estimates of the changes in the turnout of different racial groups will also be biased. Such biases may also occur if there are underlying turnout differences across racial groups even if roll-off rates did not vary by race. The appendix discusses an analysis that suggests that the SVRS turnout rates in 2010 will be overestimated to a larger degree for Blacks than for whites.

Fortunately, it is possible to correct for some of the SVRS attrition biases in order to provide a more accurate picture of the changes in turnout in Wisconsin. To correct for these biases, I compute a set of sample weights for each person on who appeared on the

2015 SVRS and was coded as having been registered in 2010 using Professor Mayer's criteria discussed above.[10] These weights are designed such that the weighted proportions of voters and non-voters in each municipality match the numbers reported by the GAB for the 2010 election. For example, suppose a municipality lost 10% of its voters and 20% of its non-voters. Then the municipality's voters will receive a weight of 1/.9 = 1.11. Thus, the weighted number of voters in the SVRS will match the number reported by GAB in 2010. Similarly, each of the municipality's non-voters will be weighted 1/.8 = 1.25 so that the weighted number of non-voters will match the GAB reported number.

Using these weights will provide accurate estimates of the overall turnout rates and turnout rates by race in 2010 so long roll-off rates are uncorrelated with race at the voting district level. The largest threat to correct calculations would be if it were the case that within each municipality one group of non-voters had a disproportionate roll-off rate. If that were the case, my procedure would overestimate the turnout of that group and underestimate the turnout of other groups. For example, if within each district, Black non-voters rolled-off at higher rates, my estimate of the number of Black non-voters would be too small and the estimate of Black turnout would be inflated. Such a bias would tend to understate the change in Black turnout between 2010 and 2014 which would work in favor the plaintiffs' arguments.

In computing these weights for 2010, I had to deal with some data reliability issues. Unfortunately, some municipalities reported obviously flawed data to the GAB in 2010. These included municipalities for which the registration total is missing or those for

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[10] Unfortunately, given the structure of the SVRS file there is no way to make a completely accurate determination of when the voter first registered to vote in Wisconsin.

which the number of votes cast exceed the number of registrants. There are also a

handful of cases where the number of registrants is an order of magnitude larger than the

number of voters, suggesting another data entry error. Fortunately, these errors affect a

very small percentage of those registered on the SVRS. Just over 53,000 (of 3.3 million)

registrants are affected (a little over 1.5%). For these voters, I calculated the weights at

the county level. The calculations of county weights omit those municipalities with

suspect data.

With my computed weights, I am able to re-estimate the turnout figures from the

SVRS that Professor Mayer reported in Table 6. These are reported in my Table 1. The

bottom row of Table 1 reports my estimates of total turnout for 2014 and 2010. Since I

did not compute weights for 2014, the 2014 rates match those of Professor Mayer.[11] My

estimate of turnout of registered voters in 2010 is 64.3. It is 9.6 percentage points lower

than that reported by Professor Mayer. My estimate is 2 percentage points higher than

that reported by the GAB. The discrepancy is entirely due to the reporting errors

discussed above. If I eliminated the municipalities with flawed data, the corrected total

from the GAB report would also be 64.3%.

Table 1: Turnout by Racial Groups in 2010 and 2014				
	2014	2010	Diff	Ratio
White	72.8%	65.5%	7.3%	1.11
Black	62.2%	56.2%	6.0%	1.11
Hispanic	49.6%	43.3%	6.3%	1.14
Total	71.3%	64.3%	7.0%	1.11

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[11] The attrition between November 2014 and September 2015 is so small that extremely little would be gained by computing the weights.

Table 1 also reveals that the increased turnout from 2010 to 2014 was not limited to white voters. Both Black and Hispanic voters saw substantial turnout increases over that period.[12] The percentage point increases in turnout are not much lower than those for white voters. However, even these differences may be primarily a reflection of the lower baseline turnouts for Blacks and Hispanics in 2010. Consequently, it may be more meaningful to express the changes in terms of an "odds-ratio" that expresses the odds that a Black voter would vote in 2014 relative to the odds she would vote in 2010.[13] This ratio is computed by simply dividing the 2014 percentage by the 2010 percentage. Based on this calculation, Blacks were 1.11 times more likely to vote in 2014 than in 2010. This ratio is identical to the odds ratio for whites. Hispanics actually had the highest odds ratio. Hispanics were 1.14 times more likely to vote in 2014 than in 2010.

Another limitation of Table 1 (and Professor Mayer's Table 6) is that turnout is measured relative to the number of registrants. But several changes in Wisconsin voting procedures affect the process of registration.[14] Consequently, the denominator in these calculations might have been influenced. So it would be better to consider changes in turnout relative to a denominator that was not impacted by the changes in laws.

To this end, I estimate turnout rates as a proportion of the number of voting aged citizens (CVAP turnout rates). Using data from the Census's American Community Survey, I am able to calculate the size of the citizen voting aged populations for whites,

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[12] This finding contradicts Professor Barry Burden's calculation from the Current Population Survey which suggested declining Black and Hispanic turnout. See Burden Report, Table 1, page 7.

[13] The odds ratio is often used to evaluate the effectiveness of experiments. It reflects the proportional increase in the likelihood that the treatment group obtains some outcome relative to the control group. For sake of the analogy, I assume that voters in 2014 are "treated" by the new voting procedures while voters in 2010 constitute a control group.

[14] The following acts touch upon various aspects for registration: Act 23 (2011), Act 240 (2011), Act 76 (2013), Act 177 (2013), Act 182 (2013).

Blacks, and Hispanics in 2010 and 2014.[15] These rates, the percentage point changes, and the odds ratios are reported in Table 2.

Table 2: Turnout of Voting Age Citizens				
	2014	2010	Diff	Odds Ratio
White	59.1%	54.5%	4.6%	1.08
Black	50.2%	46.2%	4.0%	1.09
Hispanic	23.0%	21.4%	2.6%	1.07
Total	56.6%	52.5%	4.1%	1.08

By these calculations, turnout again increased for all groups. But now the percentage point increase for Blacks is much closer to that of whites and the odds ratio for Blacks is actually higher than that for whites.

This reversal in the odds ratio is partly a reflection of increased registration rates of Blacks between 2010 and 2014. In 2010, Blacks constituted 5.34% of Wisconsin's CVAP and about 5.37% of the registered voters based on my calculations using the attrition weights discussed above. So the Black share of registrations was approximately the Black population share. However, in 2014, Blacks constituted 5.79% of the CVAP and 5.9% of registered voters in the SVRS file. So Blacks are now registered at rates higher than the rest of the population. These higher rates of registration dampen the registered turnout rate relative to the CVAP turnout rate.

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[15] See https://www.census.gov/rdo/data/voting_age_population_by_citizenship_and_race_cvap.html. The mapping of census data to the Catalist race imputations in the SVRS is not straightforward due to the multi-racial categories used by the Census. So I used the following procedures. The CVAP for whites is the proportion of "White Alone" categories, the CVAP for African-Americans is the CVAP for "Black Alone" and all multiracial categories that include African-Americans as well as the "two or more" racial category. The CVAP for Hispanics is that of those who identified as "Hispanic or Latino."

Section III: Mayer's Analysis of Individual Turnout

To assess the extent to which changes in electoral laws and procedures affected

participation in the 2014 election, Professor Mayer estimates a series of multi-variate

statistical models. For my purposes, it is sufficient to focus on two of them. The first is

what Professor Mayer calls Model 1. This model estimates the probability that a

registrant votes in 2014 as a function of her demographic profile and her voting history

from 2010 to 2014. Mayer's full description of the model follows.

> **Model 1** estimates a registrant's probability of voting in the 2014 election, using
> voting history in the 2012 presidential election, the recall election, the 2010
> election and a series of demographic variables. This gives me an overall estimate
> of changes that occurred between 2010, before the registration and voting changes
> were enacted, and 2014, when most of them were in place and a majority of
> voters believed that the voter ID law was in effect. This model captures all
> registrants who were in the SVRS as of the 2010 election (that is, it excludes
> everyone who registered afterwards).

The second model is what Professor Mayer calls Control Model 1. This model roughly

parallels Model 1 except that it estimates the probability of voting in 2010 as a function

of demographic variables (as measured in 2015) on the vote histories between 2006 and

2010. Professor Mayer's description follows.

> **Control Model C1** estimates a registrant's probability of voting in the 2010
> election, which took place before any of the post-election voting and registration
> changes took place, using voter history in 2006 and 2008 and the same
> demographic variables as the models above.

The logic of Professor Mayer's research design is that the empirical relationships

generated by the Control Model for 2010 would have carried over into the 2014 election

if it were not for the legal changes that took place between those two elections.

Professor Mayer's main findings are that:

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- Controlling for vote history and other demographics, Blacks and Hispanics vote at lower rates than whites in 2014, but there is no such pattern in 2010.

- Registrants living in student wards in 2015 were less likely to vote that those in other wards in 2014 but more likely to vote in 2010.

- Registrants without driver's licenses or state IDs in 2015 were less likely to vote in 2014 than they were in 2010.

These findings, however, are far from conclusive evidence for the plaintiffs' positions about the effects of the electoral law changes due to several data limitations and methodological issues. These concerns include:

The Assumption of the No-Change Counterfactual Professor Mayer's research design assumes that the turnout patterns in 2014 would have been identical to those of 2010 if not for the changes in voting rules. However, relationships between demographics and turnout may change from one election to the next for reasons unrelated to voting laws. Campaigns are different, national contexts are different, partisans may be more or less energized, etc. Overall turnout in Wisconsin mid-term elections varied from 37.8% to 50.9% between 1990 and 2006. If aggregate turnout can vary so much from election to election, it is surely the case that the turnout of specific groups can do so as well.

Interpretation of the Findings on Race and Ethnicity On page 28 of his report, Professor Mayer writes that "In 2010, prior to the voting changes (Control Model C1), African American registrants were *more* likely than other voters to vote." [his italics]. This statement is incorrect and a misinterpretation of his findings. As I documented in

section 2, Blacks were considerably less likely to vote in 2010 than were whites. So the suggestion that changes in the voter laws erased and reversed an African-American turnout advantage is very misleading.

A more correct, but still possibly misleading version of Professor Mayer's statement would be "***Controlling for vote history,*** African American registrants were *more* likely than other voters to vote in 2010." The distinction is important. Because African-American turnout in Wisconsin has lagged that of whites, the vote history itself is highly correlated with race. Consequently much of the impact of race on voting will be captured by the vote history. Thus, Professor Mayer's findings are more properly interpreted as voting histories account better for the Black-white turnout difference in 2010 than they did in 2014.   Such a pattern may emerge for many reasons beyond changes to voting rules. First, there could be an unusual pattern of turnout in one of the elections used as a control such that it is less predictive of the racial difference. For example, one of the control elections used in Model 1 is the highly unusual 2012 recall election.[16] Second, there could something atypical about the election under study such that the racial difference cannot be accounted for by historical patterns. For example, the historically high midterm turnout in 2014 would be less predicted by previous voting than would a fairly normal election such as 2010.

Attrition Effects As discussed in Section 2, the SVRS data on elections before 2014 suffers from significant attrition. Because 2010 vote histories are used in Model 1, this attrition affects both Model 1 and Control Model 1 which predicts voting in 2010. The

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[16] It is inappropriate to use the recall election and the 2012 general election vote histories for another reason. These elections took place with some of the electoral rules changes in place. If the plaintiffs' assertions about turnout effects were true, turnout in these elections would have also been affected by the changes. This would lead to what social scientists call "post-treatment" bias.

problems with Control Model 1 are even more severe because it includes the 2006 voting

histories. The differential rates of attrition between 2006 non-voters and voters is so

large that the 2006 turnout rate is estimated from the SVRS to be 87.8%.[17] Similarly, the

2010 turnout is estimated at 94.6% of those registered in 2006. Thus, the sample for

Control Model 1 is one in which almost everyone voted in the previous two elections.

Due to a ceiling effect (a group's turnout cannot exceed 100%), such high turnout

samples will naturally tend to exhibit smaller group differences in turnout. Table 3

demonstrates this relationship. Each entry reflects the percentage point difference

between white and Black turnout for each midterm using different samples from the

SVRS: those registered since 2006, those registered since 2008, etc.[18] Importantly, the

racial gap is smaller in the samples with the most attrition 2006 and 2008. This effect of

attrition may help explain why there was no remaining racial gap in 2010 in the 2006

sample after the voting history was controlled for.

Table 3: White-Black Turnout Gap for Each Combination of SVRS Sample and Midterm Election			
	Midterm Election		
SVRS Sample	2006	2010	2014
2006	5.8	0.5	2.8
2008		10.5	8.3
2010		9.3	8.1
2012			11.6
2014			10.5

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[17] Professor Mayer attempts to deal with this problem by restricting his sample for Model 1 to those in the SVRS file in 2006. He labels this model Control Model 2. But given that this is a sample for which almost 9 out of 10 voted in 2006, it is hardly representative.

[18] The empty cells reflect combinations of elections and samples for which some voters were ineligible to vote in that election. For example, some voters in the 2010 sample would have been ineligible to vote in 2006.

Table 3 reveals another important feature of the SVRS data. Although the racial gap in 2014 is larger than the one in 2010 for the 2006 sample, the 2014 racial gap is smaller than that of 2010 for both the 2008 and 2010 samples.   Even though the 2014 gap with the 2006 sample is larger than the 2010 gap, it is smaller than the 2006 gap using the same 2006 sample. Consequently, the sample used by Professor Mayer for Control Model 1 is unique in predicting an increased racial gap between 2010 and 2014.

And, finally as discussed in Section 2, the high levels of attrition obscures the fact that turnout rose for Blacks and Hispanics as well as whites between 2010 and 2104.

Measurement Error Two of Professor Mayer's central findings involve the effect of demographic variables measured in 2015 on voting in 2010. He measures whether a registrant has a driver's license or state photo ID in 2015 and assumes that if the voter had one in 2015 she had one in 2010. Conversely, if the registrant lacked one in 2015, she lacked one in 2010. Similarly, he assumes that if a registrant lived in a student ward in 2105 she lived in one in 2010 and vice versa.

To the extent that registrants obtain and lose driver's licenses and move in and out of student wards, Professor Mayer's data for 2010 will contain significant measurement error. Poorly measured explanatory variables will often lead to biased estimates. Generally, the bias will be to *attenuate* the effect of a variable towards zero. The logic of attenuation bias is straightforward. Consider Professor Mayer's ID variable. Due to mismeasurement, some 2010 ID holders will be mistakenly classified as not having an ID in 2010 because they did not have one in 2015. Conversely, some of those who lack an ID in 2010 but have one in 2015 will be classified as holding an ID. Thus, the group of

voters assumed to have IDs in 2010 will contain both those that do and those that don't. The same is true for the group assumed not to have IDs. Thus, the measurement error makes the two groups appear more similar than they actually are. Consequently, any measured behavior difference will be smaller than the true difference across the groups. Consequently, there are strong reasons to believe that the effect of not having an ID in 2010 in Control Model 1 is biased towards zero. Thus, the comparison of the effect in 2010 with the effect in 2014, where there is presumably less measurement error, is problematic. The observed increase in the negative effect of lacking an ID may be a simple artifact of the attenuation of the 2010 effect due to measurement error.

A similar but more extreme logic might hold for residence in a student ward. Because people tend to move into such wards when they matriculate and leave when they graduate, living in a student ward in 2015 may be negatively correlated with having lived in one in 2010. If this were the case, the bias would not simply be attenuation but might even reverse the direction of the relationship and account for positive association between living in a student ward and voting in 2010.

Given these measurement concerns, I do not find the findings related to IDs or residency in a student ward to be very credible.

Section 4: Partisan Effects

One of the plaintiffs' claims, argued most clearly in the submission by Professor Allan Lichtman, is that the changes in Wisconsin electoral laws were intended to produce a partisan advantage for the Republican Party. While it is beyond the scope of my report

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to assess claims about partisan intent, I can evaluate the available evidence of whether there was any partisan effect.

Ideally, one would like to have data on individual voter partisanship to assess whether turnout of Democratic and Republican voters was differentially impacted by the changes in voting laws. Unfortunately, since Wisconsin does not register voters by party, I do not have such data.[19]

Without individual data, I have test for partisan effects in a more indirect way using aggregate data from Wisconsin's municipalities which was obtained from the Government Accountability Board website. My focus will be on a comparison of vote choice at turnout in the 2014 gubernatorial race compared with that of the 2010 race.

Recall from the discussion above that the two elections were very similar in terms of the partisan vote shares. In each election, the Republican candidate Scott Walker won with 52.3% of the vote. Although the aggregate vote shares were almost identical, there are two logical ways in which the Republicans might have benefited from a relative suppression of Democratic votes. First, Republicans would have benefited if the law's effect systematically boosted Republican vote shares in some municipalities by depressing Democratic turnout. Since the aggregate votes share stayed the same, such a boost in these municipalities would have been required to offset losses elsewhere. Finding evidence that the Republican votes were very highly correlated from 2010 to 2014 would argue against such an effect. Second, Republicans would have been advantaged had turnout fallen (or increased less) in Democratic municipalities than in

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[19] According to the statement of Yair Ghitza, he provided Professor Mayer with Catalist's estimate of the self-identified partisanship of 98.6% of the registrants in the SVRS file. When the Attorney General's office inquired about the availability, it was notified that since the partisanship estimates played no role in the analysis of plaintiffs' experts they were not discoverable and would not be provided.

Republicans municipalities. Evidence that turnout increases were very similar across Democratic and Republican municipalities, however, would not be consistent with such a claim.

To conduct these tests, I merged electoral returns from the gubernatorial races from 2010 to 2014 at the municipal level.[20] This allows me to directly compare party vote shares and turnout (measured as total votes cast) across the two elections.

To assess the claim that changes in electoral laws systematically boosted Republican vote shares in some municipalities to compensate for losses in others, Figure 1 plots the Republican share of the "two-party" gubernatorial vote share in 2010 versus 2014.[21] The radii of each circle is proportional to the total number of Democratic and Republican gubernatorial votes cast in 2010. First, note the very strong correlation between the vote shares at the municipal level. The correlation (weighting municipalities by the number of votes cast in 2010) is .982.

The solid line in Figure 1 represents the best fitting linear relationship between the two sets of vote shares (weighting by the number of 2010 votes).[22] The dashed line represents the hypothetical relationship if the vote shares were equal across elections (i.e. the 45-degree line). Note that the regression line and the 45-degree line are almost the same. To the extent that there is any deviation, it is that Scott Walker performed slightly better in 2014 in the most Republican municipalities and slightly worse in the most Democratic municipalities. That Walker over performed on average in only the very
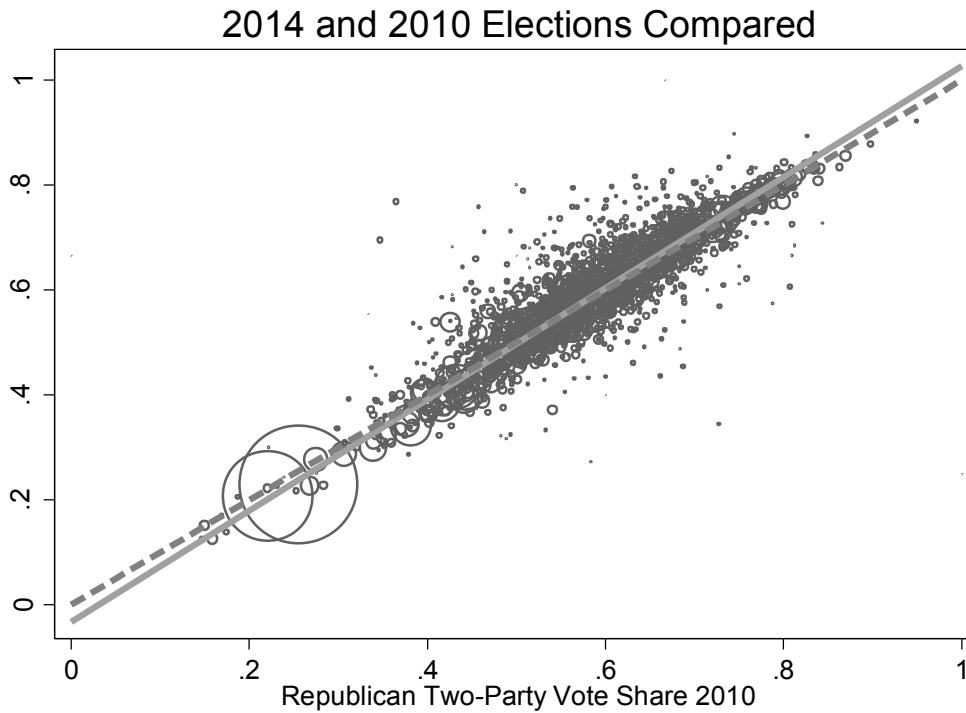
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[20] While it would have been preferable to compare vote shares at a smaller level of aggregation, the sub-municipal units that report returns changed somewhat between the two elections. Therefore, my attempts at an accurate merge were unsuccessful.

[21] The "two party" Republican vote share is the number of Republican votes divided by the sum of the Republican and Democratic votes. This measure eliminates the effects of third-party and write-in candidates.

[22] The formula for the regression line is RepVote14 = -.032 + 1.06 *RepVote10 and the R^2 = .964. The coefficient for RepVote10 is statistically significantly greater than 1 (t = 12.84).
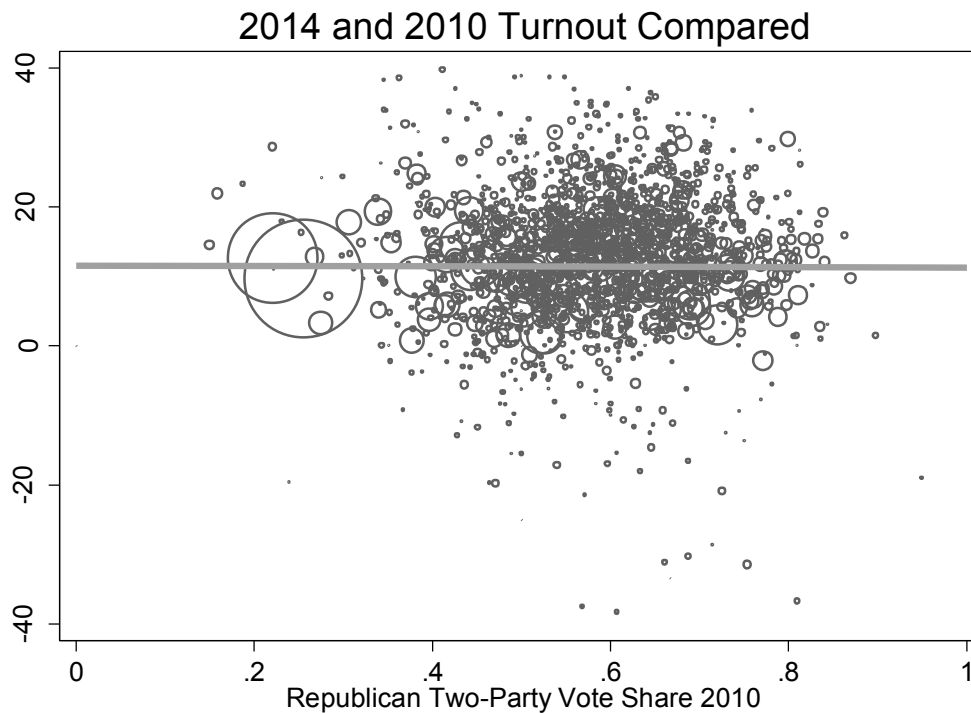
most Republican municipalities is somewhat hard to square with a suppressed

Democratic vote.

Figure 1

2014 and 2010 Elections Compared

I can turn now to the second possibility, that changes in electoral law produced a

Republican advantage by reducing turnout in Democratic municipalities. Figure 2 plots

the percentage change in turnout against the 2010 vote. If anything the turnout gain was

largest in the most Democratic municipalities, although the difference are not statistically

significant.

Given that the distribution of 2014 Republican vote shares is almost identical to

that of 2010 and there was no systematic drop in turnout in Democratic municipalities, it

is difficult to identify any partisan advantage obtained by the changes in electoral laws

that occurred between 2010 and 2014.

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Figure 2

2014 and 2010 Turnout Compared

Note: some small municipalities with large turnout swings are omitted from graph for presentational purposes but they are included in the calculation of the regression line.

Section 5: Absentee Voting

Several of Wisconsin's electoral reforms involve changes to procedures for absentee voting.[23] The plaintiffs allege that the changes disproportionately impact minority voters. In this section, I assess these claims using the SVRS file submitted by Professor Mayer along with the 2010 weights that I developed to correct for attrition.

To test whether the new procedures effected absentee voting, I compute absentee voting rates for whites, Blacks, and Hispanics in two different ways. The first method

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[23] These include Act 23 (2011) which reduced the in-person absentee voting period, Act 75 (2011) which restricted the faxing and emailing of absentee ballots, Act 227 (2011) which required that a copy of a photo ID be submitted with the absentee ballot, and Act 146 (2014) which restricted the days and times for in-person absentee voting.

computes the fraction of registrants in each group for each election who cast absentee

ballots. These numbers are reported in Table 4.[24] The second method is to compute the

fraction of actual voters who chose to vote absentee for each group in each election.

These numbers are reported in Table 5.

Table 4: Absentee Voting Rates (Registrants)				
	2014	2010	Diff	Odds Ratio
White	11.2%	6.1%	5.1%	1.85
Black	7.6%	3.8%	3.8%	2.02
Hispanic	4.0%	2.1%	1.9%	1.89

Table 5: Absentee Voting Rates (Voters)				
	2014	2010	Diff	Odds Ratio
White	15.4%	9.3%	6.1%	1.66
Black	12.3%	6.7%	5.6%	1.82
Hispanic	8.0%	5.0%	3.0%	1.61

Both tables tell roughly similar stories. Despite the changes in absentee voting

procedures, the usage of absentee voting climbed substantially for all three groups. As a

share of registrants, Black usage more than doubled.

While the plaintiffs' might argue that the increase would have been even larger absent

the reforms, such a claim is hard to square with the historical patterns of absentee voting

in Wisconsin. The midterm-to-midterm increase in absentee voting from 2010 to 2014

was the largest percentage point increase over the time that the GAB reports such data

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[24] These statistics are generally in line with those reported by the GAB. The GAB reports 374,075 absentee votes (15.44% of all votes cast) in 2014 and 230,744 in 2010 (10.56% of all votes cast). The small difference in the rates for 2010 is plausibly due to the attrition from the voter file. For example, if absentee voters are more likely to attrite than election day voters, the attrition bias would reduce the absentee usage rate of voters for 2010.

(since 1990). It is the second largest in terms of odds-ratio terms (1990 to 1994 was slightly higher).[25]

Section 6: Conclusions

Professor Mayer concludes his report by stating that

> There is no doubt that the changes to voting enacted in Wisconsin since 2011 have significantly lowered the probability that a voter can cast a ballot in 2014, with the effects falling particularly hard on racial minorities, students, young voters, and those without ID. The effects on these subpopulations are either absent altogether in 2010, before the voting laws changed, or significantly smaller than they were in 2014.

Clearly, I believe that there are many reasons to doubt such conclusions. First, rather than observing a "significantly lowered … probability that a voter [could] cast a ballot in 2014", I documented that turnout increased markedly from 2010 to 2014 for racial minorities as well as for whites. In proportional terms (measured by the odds ratio), the turnout increases among the registered and citizen voting age population were at least as large for African-Americans as they were for whites. Second, the findings suggesting the absence or smaller effects on racial minorities, students, young voters, and those without ID may largely be attributable to a variety of attrition biases, measurement error, and misinterpreted findings.

Additionally, I find little evidence that the changes in Wisconsin electoral law had any significant partisan effect. The 2014 gubernatorial election was almost an exact replay of 2010 both in terms of vote shares and turnout at the municipal level. Nor did I find evidence that changes to absentee balloting reduced its usage by any racial or ethnic group.

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[25] http://www.gab.wi.gov/elections-voting/statistics

Appendix A: Attenuation Biases by Race from SVRS

In this appendix, I demonstrate that the upward bias in turnout rates cause by attrition is larger for groups with lower baseline turnout rates. Consequently, if the issue of attrition were left unaddressed, the SVRS file would underestimate the change in turnout for Black voters more than it would for white voters.

Let $T = V/(V+N)$ the be actual turnout of some group in an election before 2015 where V is the number of voters and N is the number of non-voters. Assume that (1-x)% voters and (1-z)% non-voters roll-off prior to 2015 where $x > z$. Therefore the observed turnout rates would be $xV/(xV + zN)$. The ratio of actual turnout to observed turnout would be $(xV + zN)/ (xV + xN)$ or $(x – z/x)T + (z/x)$. Since $x > z$, this ratio is less than one and the lower the ratio, the greater the bias.

Clearly, the ratio is an increasing function of T and only if if $x – z/x > 0$. Using data from Professor Mayer's Tables 4 and 5, I compute that $x = .92$ and $z = .79$. Thus $x – z/x = .06$ so the bias is larger for lower turnout groups. Thus, Table 6 overestimates Black turnout in 2010 more than it does white turnout. In turn, this means that the "decline" in turnout of Blacks relative to whites is overstated.